

REMARKS

Claims 3-5, 7-41 and 42-45 have been canceled. Claims 1 and 42 and the claims dependent thereon have been amended to further patentability distinguish the invention from the prior art and overcome formal objections raised by the Examiner. Claims 1, 2, 6, 42 and 46 remain active in this application. Such cancellations of and amendments to claims are only for the purpose of expediting the prosecution of this application and are not to be construed as an abandonment of any of the novel concepts disclosed therein.

The Examiner raises formal objections to claims 43 and 44. These claims have been canceled.

The final action states:

Claims 1 and 42 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 1 and 42 disclose "a nondirectional audio device, positioned inside said listening area and outside said first of said listening spaces, distant from said first of said listening spaces, for radiating sound waves corresponding to spectral components in a second non-bass frequency range of a second of said channels". The Examiner has not found an audio device in the specification that satisfies these limitations. Figure 3A depicts loudspeakers 18LF, 18CF, 18RF, 18LS, 18LC, 18RS and 20 inside said listening area and outside said first of said listening spaces. Speaker #20, is a nondirectional loudspeaker however reproduces audio signals in the bass frequency range (see; Spec. pg.11 ln.17-20). Speakers #18, reproduce signals in a non-bass frequency range, however are directional. The directionality of loudspeakers with respect to frequency has been discussed with the Applicant in an interview on October 7, 2008. It is well known that middle to high frequency range loudspeakers such as speaker #18 contain a directional characteristic. In view of the above, neither loudspeaker #20 or #18 meets the disclosure of the present claim language.

Claims 1 and 42 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject

matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The currently amended claim language contains new matter that was not disclosed in the original disclosure. Specifically, "a nondirectional audio device ..., for radiating sound waves corresponding to spectral components in a second **non-bass** frequency range". Pp. 2-3.

This ground of rejection is repeated at least as applied to the claims as amended. The reference to nondirectional and non-bass frequency range have been omitted from these claims. Accordingly, withdrawal of the rejection of claims under §112 is respectfully requested.

The office action states:

Claims 1 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scofield (US 6,853,732 B2) in view of Bakgaard (US 4,031,321) and in further view of Wiener et al (US 6,055,320).

With respect to claim 1, Scofield discloses an audio system including a plurality of channels (fig.3 #54,56) intended to be radiated by an audio device in a predetermined positional relationship to a listener, comprising: a listening area (fig.3 #64), comprising a plurality of listening spaces (fig.3 "spaces occupied by listeners #26"); a directional audio device (fig.3 #58,60), positioned in a first of said listening spaces, close to a head of the listener (fig.3 #26), for radiating first sound waves corresponding to spectral components in a first frequency range of a first of said channels; and a nondirectional audio device (fig.3 #52), positioned inside said listening area and outside said listening space, distant from said listening space, for radiating sound waves corresponding to spectral components in a second frequency range of a second of said channels (col.4 In.58-63).

Scofield does not disclose expressly wherein the first frequency range substantially overlaps with the second frequency range, however Scofield does teach signals above 250Hz are supplied to speakers 58 and 60 and signals below 250Hz are supplied to speaker 52.

Bakgaard discloses a woofer (fig.1 #2) and tweeter (fig.1 #4) system with a crossover frequency of 500Hz. Bakgaard teaches that in an ideal system the crossover network (fig.1 #6) should be able to sharply divide the input signal at 500Hz, however in practice this is not possible. In order to remedy this problem frequency ranges are overlapped as shown in figure 2 to achieve a flat frequency response (col.1 In.53-68, col.2 In.1-4). At the time of the invention it would have been obvious to a person of ordinary skill in the art to overlap frequency ranges of

the loudspeaker of Scofield as taught by Bakgaard. The motivation for doing so would have been to achieve a flat frequency response without gaps at the crossover frequency.

Scofield does not disclose expressly wherein the directional audio device comprises at least one of: a structure comprising barriers or at least two radiating elements that radiate sound waves that destructively interfere more in some directions than in others.

Wiener discloses a directional audio device (fig.1) that comprises a structure comprising barriers (fig.1 #24,28) that cause sound waves to radiate with more amplitude in some directions than in other directions over a wide range of frequencies (col.4 ln.53-60). At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the barriers of Wiener in the directional audio device of Scofield. The motivation for doing so would have been to limit sound dispersion such that listeners in adjacent listening spaces can not hear undesired dispersed sound.

With respect to claim 5, Scofield discloses an audio system in accordance with claim 1, wherein said listening area comprises a theater and said first and second listening spaces comprise seating locations within said theater (col.1 ln.33-36). Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scofield (US 6,853,732 B2) in view of Bakgaard (US 4,031,321) in view of Wiener et al (US 6,055,320) and in further view of Iwahara (US 4,199,658).

With respect to claim 2, Scofield discloses an audio system in accordance with claim 1, wherein said directional audio devices comprise a plurality of acoustic drivers (fig.3 #58,60), however does not disclose expressly wherein said acoustic drivers are positioned and arranged to radiate sound waves that interfere destructively at a first predetermined location in space and to interfere nondestructively at a second predetermined location in space.

Iwahara discloses an audio system wherein a plurality of acoustic drivers (fig.1 #1-4) are positioned and arranged to radiate sound waves that interfere destructively at a first predetermined location in space and to interfere nondestructively at a second predetermined location in space (col.1 ln.37-68, col.2 ln.1-2).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the crosstalk cancellation system of Iwahara in the invention of Scofield. The motivation for doing so would have been to cancel inter-aural interferences between the right and left ears of a listener.

With respect to claim 3, Scofield discloses an audio system in accordance with claim 2 in view of Iwahara, wherein said first predetermined location is in a first listening space and said second predetermined location is in a second listening space (Iwahara: col.1 In.57-66).

With respect to claim 4, Scofield discloses an audio system in accordance with claim 2 in view of Iwahara, wherein said first predetermined location is proximate a first volume for receiving a first ear of a listener and wherein said second predetermined location is proximate a second volume for receiving a second ear of said listener (Iwahara: col.1 In.57-66).

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Scofield (US 6,853,732 B2) in view of Bakgaard (US 4,031,321) in view of Wiener et al (US 6,055,320) and in further view of Fabry (US 7,164,773 B2).

With respect to claim 6, Scofield discloses an audio system in accordance with claim 1, however does not disclose expressly wherein said listening area comprises a vehicle passenger compartment and said listening locations comprise seating locations within said vehicle passenger compartment.

Fabry discloses an audio system to be mounted within an automobile (see figure).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the audio system of Scofield in the automobile Fabry. The motivation for doing so would have been to provide a virtual sound system within the cabin of a vehicle so as to provide a realistic reproduced sound to a passenger. Pp. 4-8.

This ground of rejection is respectfully traversed.

In KSR Int'l Co. v. Teleflex Inc., 82 U.S.P.Q. 2d 1385, 1396 (U.S. 2007), after stating the steps "in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent in issue", the Court said, "To facilitate review this analysis should be made explicit." See *In re Kahn*, 441 F.3d 977, 988 (CAFed. 2006) ("[R]ejections on obvious grounds cannot be sustained by mere conclusory statements, instead there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness").

"A fact finder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning. See *Graham*, 383 U.S., at 36

(warning against a “temptation to read into the prior art the teachings of the invention in issue” and instructing courts to “guard against slipping into the use of hindsight”)(quoting *Monroe Auto Equipment Co. v. Heckethorn Mfg. & Supply Co.*, 332 F. 2d 406, 412 [141 USPQ 549] (CA6 1964))). *Id.* 1397.

In *Ex parte Aylward*, (BPA&I, Appeal No. 2007-2368 December 4, 2007)the Board said in reversing a final rejection,

“Both anticipation under §102 and obviousness under §103 are two-step inquiries. The first step in both analyses is a proper construction of the claims The second step in the analysis requires a comparison of the properly constructed claims to the prior art”. *Medichem, S.A. v. Rolabo, SL*, 353 F. 3d 928, 933 (Fed. Cir. 2003) (internal citations omitted);

A. CLAIM CONSTRUCTION

“The Patent and Trademark Office (PTO) must consider all claim limitations when determining patentability of an invention over the prior art.” *In re Lowry* 32 F. 3d 1579, 1582 (Fed. Cir. 1994) (citing *In re Gulack*, 703 F. 2d. 1381, 1385 (Fed. Cir. 1983). Slip Op. Pp. 7-8.

* * *

“In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a *prima facie* case of obviousness.” *In re Rijckaert*, 9 F.3d 1531, 1532 (Fed. Cir. 1993) (citing *in re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992)). “A *prima facie* case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art.” *In re Bell*, 991 F.2d 781,783 (Fed. Cir. 1993) (quoting *In re Rinehart*, 531 F. 2d 1048, 1051 (CCPA 1976)).

In *Ex parte Hamilton* (BPA&I Appeal No. 2007-3091, March 11, 2008) in reversing a final rejection the Board said:

The test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art. See *In re Kahn*, 441 F.3d 977, 987-88 (Fed. Cir. 2006), *In re Young*, 927 F.2d 588, 591 (Fed. Cir. 1991), and *In re Keller*, 642 F.2d 413, 425 (CCPA 1981).

The Examiner can satisfy this burden by showing some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. *KSR Int'l. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007) (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)). Slip Op. Pp. 5-6.

The pertinence of the specification to claim construction is reinforced by the manner in which a patent is issued. The Patent and Trademark Office ("PTO") determines the scope of claims in patent applications not solely on the basis of the claim language, but upon giving claims their broadest reasonable construction "in light of the specification as it would be interpreted by one of ordinary skill in the art." *In re Acad. Of Sci. Tech. Cir.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). *Phillips v. AWH Corp.*, 76 U.S.P.Q. 1321, 1329 (Fed. Cir. 2005) (en banc).

In constructing claim 1 the specification discloses the two local audio devices radiating elements that radiate sound waves destructively to interfere more in some directions than the sounds waves destructively interfere in other directions near the listening space close to a head of the listener with a first of the radiating elements for radiating first sound waves corresponding to a first of the channels and a second nonlocal audio device positioned inside the listening area and outside the first of the listening spaces distant from the first of the listening spaces for radiating sounds waves corresponding to a first of the channels. The primary reference does not disclose these limitations. The primary reference does not disclose local and nonlocal audio devices with the nonlocal device and a radiating element of the local device radiating sound waves corresponding to the same channel. The secondary reference does not overcome the deficiencies of the primary reference. The secondary reference discloses a conventional woofer-tweeter arrangement wherein the woofer radiates the spectral components below the crossover frequency and the tweeters radiate spectral components above the crossover frequency. That is hardly a disclosure of local and nonlocal audio devices radiating sound waves corresponding to the same channel. In constructing the claims, the specification explains what is meant by a local and nonlocal audio device radiating sound waves corresponding to the same channel. FIG. 3C shows nonlocal device 18F and local radiating element 12LF radiating sound waves corresponding to the left front channel.

It is therefore impossible to combine the primary and secondary references to meet the limitations of the rejected claims.

"Moreover, we observe that even if these references were combined in the manner proposed by the examiner, that which is set forth in appellant's claims . . . would not result." *Ex parte Bogar*, slip op. p.7 (BPA&I Appeal No. 87-2462, October 27, 1989). "Even if we were to agree with the examiner that it would have been obvious to combine the reference teachings in the manner proposed, the resulting package still would not comprise zipper closure material that

terminates short of the end of the one edge of the product containing area, as now claimed." *Ex parte Schwarz*, slip op. p.5 (BPA&I Appeal No. 92-2629 October 28, 1992). "Although we find nothing before us indicating why it would be desired to combine the references in the manner urged by the examiner, it is clear to us that such a modification by itself would not result in that which is set forth in the claims." *Ex Parte Kusko*, 215 U.S.P.Q. 972, 974 (BPA&I 1981).

That it is impossible to combine the reference to meet the limitations of the rejected claims is reason enough for withdrawing the rejection of them.

The final action states:

Claims 42-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scofield (US 6,853,732 B2) in view of Bakgaard (US 4,031,321). With respect to claim 42, Scofield discloses an audio system including a plurality of channels (fig.3 #54,56) intended to be radiated in a predetermined positional relationship to the a listener, comprising: a listening area (fig.3 #64) comprising a plurality of listening spaces (fig.3 "spaces occupied by listeners #26"); a directional audio device (fig.3 #58,60) comprising at least two radiating elements radiating sound waves that destructively interfere more in some directions than the sound waves destructively interfere in other directions, the directional audio device being positioned in a first of said listening spaces, close to a head of the listener (fig.3 #26), for radiating first sound waves corresponding to spectral components in a first non-bass frequency range of a first of said channels; and a nondirectional audio device (fig.3 #52), positioned inside said listening area and outside said first of said listening spaces, distant from said first of said listening spaces, for radiating sound waves corresponding to spectral components in a second non-bass frequency range of a second of said channels (col.4 In.58-63). From figure 4 of Scofield it is clear that signals from audio devices #58,60 could interfere or create crosstalk however only in some directions, such as towards the rear of the listeners head.

Scofield does not disclose expressly wherein the first frequency range substantially overlaps with the second frequency range, however Scofield does teach signals above 250Hz are supplied to speakers 58 and 60 and signals below 250Hz are supplied to speaker 52.

Bakgaard discloses a woofer (fig.1 #2) and tweeter (fig.1 #4) system with a crossover frequency of 500Hz. Bakgaard teaches that in an ideal system the crossover network (fig.1 #6) should be able to sharply divide the input signal at 500Hz, however in practice this is not possible. In order to remedy this problem frequency ranges are overlapped as shown in figure 2 to achieve a flat frequency response (col.1 In.53-68, col.2 In.1-4). At the time of the invention it would have been obvious to a person of ordinary skill in the art to overlap frequency ranges

of the loudspeaker of Scofield as taught by Bakgaard. The motivation for doing so would have been to achieve a flat frequency response without gaps at the crossover frequency.

With respect to claim 43, Scofield discloses an audio system in accordance with claim 42, wherein said first direction is toward a first listening space and said second direction is toward a second listening space (fig.3).

With respect to claim 44, Scofield discloses an audio system in accordance with claim 42, wherein said first direction is toward a first volume occupied during use of the audio system by a first ear of a listener, and wherein said direction is toward a second volume occupied during use of the audio system by a second ear of said listener (fig.3).

With respect to claim 45, Scofield discloses an audio system in accordance with claim 42, wherein said listening area comprises a theater and said first and second listening spaces comprise seating locations within said theater (col.1 ln.33-36).

Claim 46 is rejected under 35 U.S.C. 103(a) as being unpatentable over Scofield (US 6,853,732 B2) in view of Bakgaard (US 4,031,321) and in further view of Fabry (US 7,164,773 B2).

With respect to claim 46, Scofield discloses an audio system in accordance with claim 42, however does not disclose expressly wherein said listening area comprises a vehicle passenger compartment and said listening locations comprise seating locations within said vehicle passenger compartment.

Fabry discloses an audio system to be mounted within an automobile (see figure).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the audio system of Scofield in the automobile Fabry. The motivation for doing so would have been to provide a virtual sound system within the cabin of a vehicle so as to provide a realistic reproduced sound to a passenger. Pp. 8-10.

This ground of rejection is respectfully traversed. We have shown above the proper construction of the language in claim 1 that is substantially the same as in claim 42 that is absent from both the primary reference and the secondary reference. Therefore the reasoning set forth above patentably distinguishing the invention over the primary and secondary references is submitted to support the patentability of claims 42 and 46. Since

claim 46 is dependent upon and includes all of the limitation of claim 42, it is submitted to be unnecessary to discuss the tertiary reference.

If this ground of rejection is repeated, the Examiner is respectfully requested to quote verbatim the language in the references regarded as corresponding to each limitation in the rejected claims.

In view of the foregoing cancellations sharply reducing the number of active claims in this applications, amendments, authorities, and the inability of the prior art, alone or in combination, to anticipate, suggest or make obvious the subject matter as a whole of the invention disclosed and claimed in this application, all the active claims are submitted to be in a condition for allowance, and notice thereof is respectfully requested. Should the Examiner believe the application is not in a condition for allowance, he is respectfully requested to telephone the undersigned attorney at 617-521-7014 to discuss what additional steps he believes are necessary to place the application in a condition for allowance.

Please apply any charges or credits to deposit account 06-1050 under order number 02103-0519002.

Respectfully submitted,
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Date: _____

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